Remarks

Claims 1, 2, 12- 18, 20 and 21 remain in this application. Claims 1, 12, 14-18, 20 and 21 have been amended in this application. Claims 24-26 are new in this application.

Applicant has elected Group I claims (1, 2, 12-18, 20 and 21), and claims 3-11, 19, 22 and 23 have been withdrawn.

The Problems Solved By The Applicants

As discussed in the specification, coating layers, such as metal foils, used in a multilayered insulation products with a "coating" and an insulation layer, such as a foamed insulation, would rip or tear the coating or foil when it is pulled into the machine to apply to the insulation to the coating layer. For example, the metal foil would tear when applied to urethane which when polymerized would cause swelling polyurethane to foam and spread over machinery and plant. To solve this problem a glutinous plastic is applied to the coating material, such as the metal foil. The glutinous plastic when heated and crystallized gives the foil strength to be applied to the insulation. In the case of polyurethane insulation, the heat of the exothermal polymerization of urethane is used to at least in part effect the crystallization of the polyamide. The references cited by the examiner is his rejection do not suggest solving the latter problem, indeed, they do not even recognize the problem. Hence, the coating or the insulation material of the invention is not described or suggested by the references either alone or in combination.

Rejection under 35 U.S.C. 112

Claims 1-2, 12-18 and 20 are rejected based on failing to comply with the written description requirement. The term "at least two adhesion layers" is taught in the description in figure 3 and on page 4, lines 21-28. The lacquer layer is considered an adhesive layer as demonstrated in figure 4 on page 4, ln. 11-13 of the description.

In claim 18, the limitation "the adhesion layer is a lacquer layer" is described on page 4, ln. 11-13. A lacquer layer could be considered any of the adhesion layers since its function is adherence of one layer to an adjacent layer.

Rejection under 35 U.S.C. 102(b) over U.S. Patent No. 5,024,891 to Yoshiga et al.

Yoshiga et al. does not describe applying a glutinous plastic or polyamide to a metal and then heating the polyamide to form a metal/crystallized polyamide laminate. Moreover, Yoshiga only has one adhesive layer. Indeed Yoshiga et al. is primarily concerned with polyepoxy adhesives, gluing the metal to a polyamide, does not mention insulation, let alone care how the coating or metal foil is applied to

insulation. Yoshiga et al. do not have any recognition of the time/temperature cycle is necessary for providing a sufficiently strong and stiff polyamide or "plastic" as claimed.

Yoshiga describes heat treating an epoxy layer at 350° - 450°C for 5 - 30 seconds in order to provide a certain elemental composition on the surface of the metal substrate (determined by ESCA). The polyamide layer (film) is laminated to the epoxy coating, and heated to at least the melting point of the polyamide, and then cooled. It is assumed that the C-O group is converted to a C=O group by ring opening of the epoxy group of the epoxy resin, whereby hydrogen bonding takes place with the amide bond of the polyamide resin to provide a strong bonding force (Col 2, lin. 34-47). Yoshiga does not teach multiple adhesion layers, a metal layer and a crystallized plastic layer as a coating for insulation material, but instead teaches only a single layer bonding of a polyamide resin to a metal surface for electrical materials with an insulation requirement. Yoshiga does not suggest crystallizing plastic, such as a polyamide, when heating during extrusion for the manufacture of insulation materials.

In contrast, the present invention, several adhesion layers are employed to increase adhesion between the metal and plastic layers as well between the coating material and insulation material. By using this coating layer during the manufacturing of insulation material, the plastic layer protects the coating, especially from tearing and as a result, the insulation material gains solidity and surface strength.

<u>Rejections under 35 U.S.C. 102(b) over U.S. Patent No. 5,753,378 to Tebbe</u>

Tebbe does not describe applying a glutinous or amorphous plastic resin to a metal and then crystallizing the plastic such that the crystalline plastic/ metal laminate can be applied to insulation. Use of a time/temperature cycle effective for providing a crystalline plastic which is sufficiently strong to permit the coating or metal foil to be applied to insulation is not way described or suggested by Tebbe.

For example, Tebbe is concerned with "a laminated structural material that includes at least one load-bearing layer manufactured from a cellulose-composite material, and a covering layer which is a laminate comprising at least one plastic foil (polyamide) having a grid structure arranged on the metal foil (Col 1, ln. 49-53) for use in building materials. Tebbe describes a multi-layered covering layer wherein the plastic layer adhered to the metal foil is a polyamide gauze. The polyamide gauze acts as a protective layer with a grid structure to protect the metal foil adjacent to the core layer. Tebbe describes a plastic gauze laminated onto a metal foil from a multiple roll unit containing multiple stations. Tebbe does not describe a use temperature nor crystallization of the polyamide gauze (Col 3, ln. 62 - Col. 4, line 9) during the lamination step in the manufacture of a covering layer for a laminated structural material. There is no suggestion of a crystallized plastic or polyamide.

In the instant invention, the control of the time and temperature of the polyamide layer is important for crystallization to provide effective stiffness and strength. For example, the polyamide is kept at a temperature of 120° - 140°C for 1-5 minutes to obtain sufficient crystallization during

application of the metal/polyamide laminate with insulation. The isothermal crystallization temperature (T_c) is used for crystal growth of the polyamide layer. Polyamides may be crystallized, but not efficiently without established time and temperature cycles for crystallization. Unlike the cited art in this rejection, a defined time and temperature cycle for the polyamide is an important aspect of the invention. The cited art does not define or teach the use of crystallizable plasitcs and polyamides. Merely heating the polyamide layer above the softening point does not subscribe to a crystalline material. The art cited in this rejection heats the polyamide above the softening point to adhere it to the underlying layer followed by subsequent cooling after lamination. In order to optimize the crystalline properties of the polyamide, alignment of the polymer chains followed by crystallization must occur. In this invention, the "High strength and low extensibility are obtained in polymers by having a high degree of crystallinity..." (G. Odian, *Principles of Polymerization, 2nd Ed.*, J. Wiley & Sons, 1981, p. 33) This isothermal crystallization temperature is different than the softening point of the material.

Conclusion

In view of the above amendments and remarks, applicant respectfully requests allowance of the pending claims. The Commissioner is hereby authorized to charge any additional fees which may be required in this application to Deposit Account No. 06-1135.

Respectfully submitted,

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